Modified Internal Rate of Return: 
Alternative Measure in the Efficiency 
of Investments Evaluation

Mihai Mieila, Valahia University of Targoviste, Targoviste, Romania

ABSTRACT

The evaluation of the efficiency of investments relies on a system of measures based on actuarial techniques that consider the time value of money. One of the common measures used is the Internal Rate of Return (IRR). Commonly, by applying of the efficiency evaluation criteria, result consistent outcomes. In this paper, the author tries to highlight that, based on its theoretical assumptions and practical drawbacks, considering of this measure in evaluation of the investments decisions may lead to erroneous decision. Despite the fact that the Internal Rate of Return (IRR) has never had a favorable academic press, the surveys outline that financial managers seem just to enjoy this measure. The aim of this paper is to summarize the drawbacks of this indicator and to offer a presentation of the Modified Internal Rate of Return (MIRR), as a solution to express a project performance by using of a percentage measure concomitant to discard the unrealistic assumption of reinvestment of cash flow stream just at the value of the IRR, allowing a straightforward calculation.

KEYWORDS

Criteria, Efficiency Measures, Evaluation, Internal Rate of Return, Investments, Modified Internal Rate of Return, Net Present Value

1. INTRODUCTION

The determination of economic performance of investments projects represents a subject of major importance in economics and financial management. The policy of investment must to be based on universally accepted recognized criteria for selection of mutually exclusive projects, as this represents a manifestation of the resources’ limited character. The decisions regarding the opportunity of investing in one particular project or choosing between several options is reliable when it is based on a system of complementary measures, considered as representative.

Usually, the evaluation of the investments’ efficiency relies on a system of measures based on actuarial techniques, commonly used in banking activity. These measures have been adapted to the objectives of the International Bank for Reconstruction and Development, deriving a specific methodology. Then, the same methodology has been adopted in evaluation of the investments financed by other organizations belonging to the system of the United Nations, and also by the European Union.

The criteria used in the activity of investments’ evaluation have to meet some basic requirements: easiness in formulation, synthesizing of the purpose, the possibility to be expressed as much as possible upon a mathematical function and, in order to ensure the measurement of the economic efficiency, to be quantifiable through at least one indicator (Ioniță, 1994).
The financial and economic data present in the feasibility studies are therefore condensed in a set of measurements in order to reflect the project’s profitability. The most used indicators are the Net Present Value (NPV), as an absolute measure of economic performance, besides a rate of return (most used, the Internal Rate of Return, IRR), as a relative measure of efficiency. Some views expressed in the literature consider that other relative performance measures as Return on Assets (ROA) and Return on Equity (ROE) are financially meaningless and less reliable for economic analysis purposes (Peasnell, 1982; Whittington, 1988; Stark, 2004).

2. NET PRESENT VALUE AND INTERNAL RATE OF RETURN – TRADITIONAL MEASURES USED IN PROJECT EVALUATION

2.1. Net Present Value

This indicator represents one of the core measures used in the process of projects’ evaluation, expressing, in absolute value, the economic advantage generated by the investment projects, as a reward obtained by the investor in return for the assumed risk and the advanced capital. Hence, the great importance of the indicator, as the earnings in absolute terms represents one of the first stimuli for the investor. In case of companies with both social and financial purposes, the indicator expresses the necessary costs in order to achieve the social goals. The using of NPV in projects appraisal is accustomed and is supported by the academic literature as a criterion with sound theoretical basics (Berk and DeMarzo, 2011; Brealey, et al., 2011, Halpern et al., 1998).

The net present value of a project is computed based on the cash flow stream \( f = (f_0, f_1, \ldots f_n) \) and the respective discount rates, \( r_1, r_2, \ldots r_n \), upon the form:

\[
NPV(r_1, r_2, \ldots r_n) = f_0 + \sum_{h=1}^{n} f_h \prod_{k=1}^{h} \frac{1}{1 + r_k}.
\]

The project will be considered efficient if the value of NPV is positive. That means through the economic activity deployed within the project, the generated value exceeds the advanced capital, concomitant with an adequate cash generation, ensuring project loan repayment and afferent interest to settled deadlines.

If \( r_h = \lambda \) is constant for all the time-span considered, \( h = 1, n \), the NPV formula becomes:

\[
NPV(\lambda) = f_0 + \sum_{h=1}^{n} f_h \frac{1}{(1 + \lambda)^h}.
\]

If, from computations results a value of the indicator that is zero or negative, the project is unacceptable, this situation is equivalent to the fact that its profitability is lower than the discount rate used.

The value of NPV is decisively influenced by the considered discount rate, \( \lambda \), which obliges to pay attention in substantiation of its level, as it represents the minimum rate of return below which the project can not be admitted. Practically, the discount rate is equivalent to the cost of the capital structure used in project financing; in case of projects fully based on borrowed capitals, the discount rate used can be considered as the interest rate charged for the received loan. Besides the interest rate, the minimum rate also includes, where applicable, a coefficient to correct for inflation and/or for other risks. In the literature there are expressed a multitude of views regarding the discounting rate;
Related Content

User Characteristics of Transit Oriented Developments: The Case of Kelvin Grove Urban Village
[www.igi-global.com/chapter/user-characteristics-transit-oriented-developments/43795?camid=4v1a](www.igi-global.com/chapter/user-characteristics-transit-oriented-developments/43795?camid=4v1a)

Comparative Study of the Impact of CO2 Emission on Income: Case Study Algeria /Morocco Between 1990-2100
[www.igi-global.com/article/comparative-study-of-the-impact-of-co2-emission-on-income/190866?camid=4v1a](www.igi-global.com/article/comparative-study-of-the-impact-of-co2-emission-on-income/190866?camid=4v1a)
Avoid Isolation Between the “Two Cultures”—Keep It Complex and Open, A View from Science and Technology Studies (STS): Interview with Andy Stirling, Science Policy Research Unit (SPRU), University of Sussex, UK
www.igi-global.com/article/avoid-isolation-between-two-cultures/67355?camid=4v1a

Rule of Law: A Fundamental Pillar Enabling Sustainable Development and Reduction of Poverty in India
www.igi-global.com/chapter/rule-of-law/189944?camid=4v1a